J . DAVID BURCH - TRIP REPORT

Kiev, Ukraine.
Monday, March 22, 1999 -Tuesday, March 30, 1999

This trip covered two activities. The first part of the trip was the discussion of progress to date and future planned activities in the study of leukemia in liquidators (Monday, March 22 to Wednesday, March 24) and the second part involved similar activities with regard to the study of thyroid cancer in children (March 25 - March 30, 1999).

Discussions were held with a number of individuals from Kiev including both plenary sessions and individual sessions with the epidemiologic/data processing staff. Drs. Finch and Howe were present at most of the discussions with regard to the leukemia/lymphoma study with Drs. Howe and Mitchell present at similar meetings regarding the study of thyroid cancer in children.

I. Study of Leukemia/Lymphoma and Related Disorders in Clean-Up Worker (Liquidators) in Ukraine:

Meetings were held at a number of institutions all of which are part of the Research Center for Radiation Medicine under the direction of Dr. A. Romanenko.

A plenary session was held to identify the primary issues to be discussed during the trip and to focus the attention of the working group for the next six months. The plenary session included myself together with Drs. Bazyka, Bebeshko, Chumak, Dyagil, Finch, Gudzenko, Howe, Ledoschuk, Pilinskaya, Romanenko and Tsvetkova. Individual sessions with the epidemiologic, hematologic, and data management personnel followed the plenary session. A brief description of the issues and suggestions discussed in plenary and other meetings follows:

① Review of Pilot Project in the Oblast of Dnipropetrovska:

Although we had only been given the Quarterly Report V describing the progress to date in the pilot work in the oblast of Dnipropetrovska just prior to our meeting we (Professor Burch, Drs. Finch and Howe) expressed to our Ukrainian colleagues how well we thought the report had been written in terms of its integration of the various aspects of the study (epidemiology and dosimetry) and the extent to which success in field work in this oblast portends well for the initiation of Phase II of the study. .

A) Loss to Follow-Up:

On the basis of work to date it had been thought that approximately 8 percent of the cohort members in Dnipropetrovska oblast were lost to follow (i.e., 1,626 of 18,000 had not shown up for their annual examinations during the last three years). However, after taking a random sample of 50 of those loss to follow up and further following them up through key medical personnel at the oblast polyclinic level it was determined that 16 of the 50 (32%) were in fact examined in 1998 and thus added to the Registry. Of the remaining 34 cohort members it was definitely determined that contact could not be made with 7 cohort members (i.e. emigrated, in prison, emigrated), address information was determined for 11 cohort members who could be contacted and invited for medical examination and the status of 5 cohort members was unknown.

- This pilot work has shown that the loss to follow up rate in Dnipropretrovska is considerably less than it was earlier thought to be, in the order of 5%.

B) Testing of Field Work Procedures:

The feasibility of using various methods of approach to cohort members in order to assess their efficacy in enrolling clean up workers for interview and blood collection was determined by approaching a random sample of 50 such liquidators in Dnipropetrovska oblast via different mechanisms. . This experience determined that approximately 70% (35 of 50) were successfully interviewed and that 100% of those asked to give blood did in fact do so.

- Field work in Dnipropetrovska oblast has successfully demonstrated the feasibility of a larger study in other oblasts to the extent that experience in this oblast can be demonstrated elsewhere.
- It was suggested to the epidemiologic group that they compare the various approaches used to enroll cohort members for interview (letter only, physician contact only, letter together with physician contact, monetary incentives) as performed in Dnipropetrovska oblast in order to determine the most efficient methodology to be undertaken in Phase II of the project.
- Other suggestions included changing the introduction letters so that the liquidator is not given the chance to refuse and the adherence to a firm methodology to be implemented in Phase II of the study based on the experience in Dnipropetrovska oblast.

C) Field work procedures in Phase II:

Various issues regarding future field work activities in Phase II of the project were discussed with the epidemiologic group with particular emphasis on the interview and blood sampling of cases.

- It was suggested that cases and sub -cohort members be interviewed by the same person and that all interviewing staff be trained using a standard manual.
- The suggestion was made that dosimetrists should not be hired as interviewers as so doing may lead to interviewer bias.
- The importance of hiring empathetic interviewing personnel was stressed suggesting that whether they are male or female is unimportant.
- Proxy information may be obtained for deceased cases by relying on information given by the deceased cases' fellow liquidators.
- Regarding the interview of cases who are living in distant areas it was suggested that where numbers of such individuals warrant it that they be interviewed in these locations subsequent to some accrual of numbers of such individuals.

The epidemiologic group together with hematologists should look into the various methods of blood collection in the other oblasts to be included in phase II of the study with particular emphasis on standardization of workable procedures and shipment of bloods to Kiev.

- The storage and preservation of blood samples together with other biological material in Dnipropetrovska oblast together with the other oblasts to be included in Phase II must be assessed.

② **Diagnostic Review of Retrospectively Diagnosed Cases of Leukemia, Lymphoma and Related Disorders, Kiev, January 18-22, 1999.**

The success of the review of case diagnoses by the review panel which met in Kiev in January 1999 was discussed in detail with particular emphasis on determining the availability of clinical and biological material specifically for liquidators. Dr. Finch noted the high degree of agreement between the American and Ukrainian pathologists on the clinical/biological material together with agreement on the original diagnoses by the review panel.

Since the overall acquisition rate for case records and histologic material for the randomly selected cases of leukemia, lymphoma and related disorders in the target areas was as low as 40% the importance of determining the availability of clinical records historically for liquidators and how such material compares with that chosen for the general population (the latter being the data utilized in the pathology review) was emphasized. Two natural disasters, a fire in Sumska oblast and a flood in Donetska oblast, were important contributors to this low acquisition rate.

On the basis of the pathology review it was decided to seek out alternative oblasts with large numbers of registered liquidators to replace Sumskaya and/or Donetska oblasts with the result that the oblasts of Cherkasska, Chernihivska and Poltavska will now be included in Phase II of the study. Their inclusion will not substantially alter the number of liquidators in the cohort should the Donetska and Sumska oblasts be excluded.

Dr. Bebeshko reported on a detailed assessment of Cherkasska oblast both with respect to the identification of cohort members in this oblast and the availability of clinical and biologic material

for liquidators diagnosed with leukemia and lymphoma. It is anticipated by the Ukrainian side that the high degree of cooperation of key medical personnel together with the excellent availability of clinical/biologic material for liquidators in this oblast may turn out to be a model for the other oblasts. In this regard, visits by the hematologists and epidemiologists to the other oblasts with a particular emphasis on Poltavska, Chernihivska and Kiev (including Kiev City) are planned in the immediate future to determine cooperation in Phase II of the study and the availability of clinical and biological material for the liquidators.

Various issues regarding the inclusion of the new oblasts and the determination of availability of clinical and biological material for Phase II of the study were discussed and recommendations made:

- The determination of the availability of diagnostic material in all oblasts anticipated to be included in Phase II of the study must be undertaken as soon as possible.
- When ascertaining the availability of diagnostic material for liquidators in the oblasts to be included in Phase II either through random sampling of previously diagnosed cases amongst liquidators or looking at all cases it was suggested that our Ukrainian colleagues be careful that the oblast personnel are not showing them only the best material.
- That a summary of such availability together with possible mechanisms for inclusion in Phase II and related material be presented for each oblast. These summaries should be brief but nonetheless include details of the organization of each oblast as it pertains to the study, where the hematology departments are located, access to medical information, distances from Kiev, the percent of cases with absent records, the percent of cases with records, and plans for the transportation of material to Kiev. It was suggested that these summaries be sent to NCI/Columbia for our comments.
- Concentrate on oblasts where it was determined in the pathological review that records were poor for the general population to see if the records were better for liquidators.
- Confirm with the appropriate sources in each oblast that any clinical/biologic material for liquidators will not be destroyed.

- Determine the equipment and supply needs for each oblast especially with regard to the collection of biological material. In this regard it was pointed out, for example, that for oblasts distant from Kiev it may be necessary to separate cells and therefore necessitate additional equipment.

③ Consolidation of Tasks/Final Report on Phase I of the Project:

It was recommended that the preparation of the final report on Phase I of the project be as practical as possible integrating the various disciplines in the study on a goal oriented basis. The list of consolidated tasks will be useful in preparing the final report, a first draft of which is expected in a month or two. In addition, it was suggested that the preparation of the final report on Phase I of the project should go hand in hand with the preparation of a proposal for Phase II emphasizing the successful solution of problems encountered in Phase I in the identification, follow-up and field work activities involved.

Summary:

Overall I was most pleased with the progress to date in the leukemia study particularly with regard to the pilot work completed in Dnipropetrovska oblast and the success of the pathology review of historically diagnosed cases with leukemia, lymphoma and related disorders.

II. Study of Thyroid Cancer in Children:

Meetings were held in a plenary session together with the epidemiology group and data processing staff at the Institute of Endocrinology and Metabolism. Prior to the individual sessions a short meeting with Drs Tronko and Tereschenko was held to outline possible areas of concern in the study which were then discussed in more detail with the relevant staff including myself and Drs. Howe and Mitchell with the epidemiologic group (Drs. Derevyanko and Tereschenko) and the data processing staff (Aleksander Kostin (Sasha)).

The primary issues discussed included progress to date in identifying the cohort in the original eight raions together with the towns of Pripiat and Chernihiv, the pilot work in Ivankiv raion, data management and quality control including a review of all data forms, screening and interview progress to date, and response rates.

① Identification of the Cohort:

Progress to date in the identification of those cohort members registered as living in the eight study raions together with the town of Pripiat and Chernihiv in 1986 indicates that approximately 57% of the 20,000 cohort's current status has been determined through searches of the Chernobyl Registry, medical records at the raion level and through the local passport offices in each raion. Details of this search are not available for the entire cohort but have been determined specifically for Ivankiv raion which was initially chosen as a pilot raion for the study (See Appendix, Table 1). Searching is continuing in the other study raions and it is anticipated that the 84% identification record in Ivankiv raion will apply to the other raions with the exception of Pripiat town and the raions of Chernobyl and Polessky (these areas were evacuated either immediately or shortly after the accident). In addition, it is anticipated that computerized record linkage between the Chernobyl Registry and the dose measurement file following input from the record linkage workshop held in the Ukraine in November 30 to December 1998 will improve the identification of cohort members. (It is my understanding that both Dr. Anna Derevyanko of the epidemiology group and Sasha of the DCC attended this workshop).

② Screening and Interview to Date:

Progress to date indicates that 2,698 cohort members have been screened either at the fixed center in Kiev or by the mobile team. The utilization of the mobile team has been particularly useful in gaining the cooperation and subsequent attendance at screening for potential cohort members living in areas remote from the city of Kiev. Unfortunately, due to a critical backlog in data entry (see 3 below) only detailed information regarding screening and interview is available for the work in Ivankiv raion (See Appendix, Tables 3 and 4). Of those invited to participate in the study in Ivankiv

85 % have indicated that they would do so and of those approximately 60 % to date have been screened. Those cohort members who initially refused to participate in the study together with those who did not show up for the screening, did not complete all segments of the screening process or who subsequently refused when given alternative times for screening are being recontacted to ask that they reconsider their participation in the study.

An approximate breakdown of the reasons for refusal is given only for Ivankiv raion (See Appendix Table 5). It is anticipated that for the sizeable proportion indicating they could not afford to pay for the trip to the screening center or the time required for screening that further use of the mobile teams or bussing cohort members to Kiev for screening together with occasional screening on weekends will reduce the refusal rate. However, until the severe backlog in data entry is remedied (see below) it remains very unclear as to just what the refusal rates are for the bulk of the cohort i.e. those living in raions other than Ivankiv.

③ **Data Management and Quality Control:**

The data entry of forms in the study is critically in arrears and this situation must be alleviated as soon as possible. The lack of data entry makes it essentially impossible to accurately assess progress to date for the study in terms of identification and subsequent screening for cohort members in any raion other that Ivankiv. At the time of our trip to Kiev the only forms which had been entered were: dynamics of interview form (940), locator form (2085) and the registration form (100) despite the fact that 2,698 cohort members have gone through the screening process. At the time of the visit none of the clinical forms have been data entered.

- It was suggested that the number of forms entered monthly be recorded.

In addition to the severe backlog in data entry number a number of other problems were identified and possible solutions given:

- Changing the dynamics of interview form to include information on type of initial contact with potential cohort members (personal approach indicating type of person, e.g., study co-

coordinator, nurse, physician) or by letter (including type of person signing the letter) This will help in determining the mechanism which has the best track record in gaining the cooperation of potential cohort members in the study.

- In terms of quality control, in addition to Drs. Markov and Olinynk inspecting completed forms, it was advised to use the data entry system itself as a mechanism for quality control. This can be achieved by instituting range checks into the data entry program so that errors in data completion can be identified. These errors should in fact be entered into the computer and flagged as errors. Subsequent analyses of these errors will allow for the identification of problem areas in form completion, e.g., by raion, type of form, person responsible for completing the forms, etc.
- Errors in the completion of forms should not be corrected by data entry personnel at the time of data entry. It is not the job of data entry personnel to correct errors and so doing will only slow down data entry even further.
- In a large cohort of this size (20,000) it is inevitable that there will be minor errors (e.g., day of month missing, etc.) and it is not possible, or even necessary, to correct every single error.
- A filing system must be established as soon as possible for the storage of hard copies of all forms for individuals in the cohort so that copies of the forms are kept together for each individual.
- Forms should not be computer entered in the field. Concentrating data entry at the DCC ensures a higher degree of control over this function.
- Updated monthly cumulative and quarterly reports of progress to date regarding cohort identification, approach to participate in the study, screening and follow up should be initiated as soon as possible subsequent to eradicating the back log in data entry with the reports sent to NCI and Columbia thereafter.

④ Data Reporting:

With regard to the last suggestion noted above Dr. Mitchell and I spent considerable time with Dr. Derevyenko and Sasha in the DCC developing a new reporting system on the progress of the study.

We have both felt that the reporting to date of progress in all segments of the study in Ukraine (and Belarus) has not followed a logical pattern and has been disjointed. For this reason we suggested adhering to a new system of tracking and reporting on all components of the study through to completion of screening (or the lack thereof) (see Appendix Tables).

The first set of tables (i.e., those with the letters A to L on column headings) explain the information required for each entry. Due to the severe backlog in data entry (see above) any definitive numbers are available only for Ivankiv raion.

The second set of tables (without the instructions) is that which we suggested be sent to NCI and Columbia with cumulative totals, monthly.
NB. Please note that the numbers for the raions and study areas on the second set of tables other than for Ivankiv are only approximate owing to the backlog in data entry.

Dr. Mitchell and I agreed that this system may be modified as seen fit but that its basic structure be put into place as soon as possible in Ukraine and Belarus.

⑤ **Fieldwork:**

One of my earlier concerns regarding the lack of control in fieldwork, i.e., the identification and subsequent inclusion of the cohort into the study, due to a variety of individuals undertaking many functions in the various riaons and study areas has been somewhat alleviated by the news that "nurse-coordinators" have just recently been hired on a part time basis to oversee the field work in each raion or study area. To date, there are "nurse-coordinators" for the raions of Chernihiv, Ivankiv, Kozelets, Ovruch and Norodychi and the City of Chernihiv. It was unclear at the time of our visit whether the remaining study raions in Chernihiv and Zhytomyr oblasts would also have their own "nurse-coordinators."

Dr. Derevyenko informed me that a meeting of all such "nurse-coordinators" is planned in the immediate future in Kiev.

- With regard to the co-ordination of the study it was suggested that there be regular meetings of the "nurse-coordinators" in Kiev.
- It was suggested further that Drs. Derevyenko and/or Tereschenko pay regular visits to the study areas to ensure some kind of standard supervision of field work procedures.

⑥ Response Rates:

A number of suggestions were given as to how response rates relating to the willingness of potential cohort members to agree to participate and most importantly attend screening and re-screening could be improved upon.

NB: Due to the serious backlog in data entry it is virtually impossible to determine the response rate to date for most of the cohort with the exception of Ivankiv raion. Therefore, it is essential that this backlog be alleviated as soon as possible.

Suggestions:

- It may be possible to undertake some kind of hand count of the refusals to date in order to better determine the reasons for refusals. Once the major reasons are known it may then be possible to improve the response rates. This is particularly true for those potential cohort members who have indicated they could not afford to travel to the screening center (by either bussing them to the center or sending the mobile team into residential areas) and for those who indicated that they could not afford the time for the screening (by affording them with the opportunity to be screened, periodically, on weekends)
- Comparisons should be made between the success rates for the use of the fixed screening center in Kiev and the mobile teams in order to assess which screening modality works best.
- It was suggested that all potential cohort members in all study raions who refused to participate or who did not complete all segments of the screening procedure be re-contacted as soon as possible to have them re-consider their participation. Such re-contacts with refusals should be

done on a continual basis and the number of recontacts, although arbitrary, should include at least up to three such recontacts over a period of at least six months. It was also suggested that the re-contact letters (or personal communication) be changed in order to alleviate any fears or problems the refusals indicated as the reason(s) for their non-compliance.

- Publicity input in the past, i.e., each raion's newspaper publishing an article about the study together with radio station broadcasts, should be expanded on a regular basis and these new articles/broadcasts could include updates on the numbers of people being enrolled.
- The idea of some kind of incentive is going to be looked into. It appears that a monetary incentive would be prohibitively expensive however a physician in one of the study raions suggested giving each enrolled cohort member a bottle of vitamins.
- It was suggested that a random sample by raion of potential cohort members who refused be contacted and if possible brought into a "focus" group in Kiev or at the raion level so that the investigators could learn first hand from these non-responders what it would have taken the study personnel to do to have succeeded in enrolling these people into the study.
- Dr. Derevyanko will contact Dr. Vladimir Paniotto of the International Institute of Sociology in Kiev who has had some experience in assessing Ukrainian citizens' attitudes towards participating in various studies in the Ukraine. Dr. Beebe had been in contact with Dr. Paniotto previously regarding this issue.

Summary:

Overall I was pleased with the success of tracing and enrolling potential study subject into the study in the pilot raion of Ivankiv but alarmed with regard to the lack of definitive information about the bulk of the cohort who of course are resident in other raions. The elimination of the back log in data entry together with using a new logical reporting system will help focus attention to problem areas in the study and to their subsequent solution.

(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)
Table # 1	Identification Of Current Address of 1986 Cohort										
Study Rayon	Total In 20,000 Cohort in 1986	Total Living Identified	%	Deceased	%	Duplicate Records	%	Moved to Unkown Address	%	Not Found	%
Town of Pripriat											
Polessky											
Ivankiv	737	630	85%	24	3%	67	9%	26	4%	67	9%
Chornobyl											
Kozelets											
Ripkinsky											
Chernihiv											
City of Chernihiv											
Narodychi											
Ovruch											
Total	737	630		24		67		26		67	

(A)	Name of study area (Rayon or City)
(B)	Number in study area in original 1986 dose measurement file
(C)	Number who a.) found living in the original 1986 Rayon; b) living in another Rayon; c) moved out of country; d) temporarily absent
(D)	Percent of 1986 cohort identified
(E)	Deceased
(F)	Percent of 1986 cohort deceased
(G)	Number of duplicate records
(H)	Percent of 1986 cohort records which are duplicates
(I)	Number moved to address which is not known
(J)	Percent of 1986 cohort for which address is as yet unknown
(K)	Number not found
(L)	Percent of 1986 cohort who could not be found

(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)
Table # 2	**Status of Cohort with Identified Current Addresses**										
Study Rayon	**Total Living Identified**	**Total Living in Rayon**	**%**	**Living in Same Oblast**	**%**	**Living in Other Oblast**	**%**	**Emigrated**	**%**	**Temporarily Absent**	**%**
Town of Pripriat											
Polessky											
Ivankiv	630	581	92%	17	3%	24	4%	8	1%	5	1%
Chornobyl											
Kozelets											
Ripkinsky											
Chernihiv											
City of Chernihiv											
Narodychi											
Ovruch											
Total	**630**	**581**		**17**		**24**		**8**		**5**	

(A)	Name of study area (Rayon or City)
(B)	Number who a.) found living in the original 1986 Rayon; b) living in another Rayon; c) moved out of country; d) temporarily absent
(C)	Number who are now living in the original 1986 Rayon
(D)	Percent of total identified (column B)
(E)	Number who are now living in a different Rayon but the original 1986 Oblast
(F)	Percent of total identified (column B)
(G)	Number who are now living in a different Oblast than the original 1986 Oblast
(H)	Percent of total identified (column B)
(I)	Number moved to another country
(J)	Percent of total identified (column B)
(K)	Number temporarily absent (e.g., in army, students, etc.)
(L)	Percent of total identified (column B)

(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)
Table # 3	**Status of Recruitment and Screening Activity**												
Study Rayon	Total Living in Rayon	Total Invited	%	Accepted	%	Refused	%	Moved to Known Address	%	Unable to Locate	%	Other	%
Town of Pripriat													
Polessky													
Ivankiv	581	495	85%	284	49%	17	3%	24	4%	8	1%	5	1%
Chornobyl													
Kozelets													
Ripkinsky													
Chernihiv													
City of Chernihiv													
Narodychi													
Ovruch													
Recruitment in Other Rayons (people who moved from 1986 study rayons)													
City of Kyiv													
Other Chernihiv Rayons													
Other Zhytomyr Rayons													
Total	581	495		284		17		24		8		5	

(A)	Name of study area (Rayon or City)
(B)	Number found living in the original 1986 study Rayon or moved to another Rayon within the study area
(C)	Number invited to participate in the study
(D)	Percent of those found living in the original 1986 study Rayon or moved to another Rayon within the study area (Column B)
(E)	Number who agreed to participate
(F)	Percent of those invited to participate in the study (Column C)
(G)	Number who refused to particpate in study
(H)	Percent of those invited to participate in the study (Column C)
(I)	Number moved, but new address is known
(J)	Percent of those invited to participate in the study (Column C)
(K)	Unable to locate
(L)	Percent of those invited to participate in the study (Column C)
(M)	Other
(N)	Percent of those invited to participate in the study (Column C)

(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)
Table # 4	Details of Accepted Invitations												
Study Rayon	Total Accepted	Screened	%	Did Not Complete Screening	%	Scheduled for Screening	%	Did Not Show Up	%	Rescheduled for Screening	%	New Refusals	%
Town of Pripriat													
Polessky													
Ivankiv	581	350	60%	100	17%	85	15%	24	4%	17	3%	8	1%
Chornobyl													
Kozelets													
Ripkinsky													
Chernihiv													
City of Chernihiv													
Narodychi													
Ovruch													
Recruitment in Other Rayons (people who moved from study rayons)													
City of Kyiv													
Other Chernihiv Rayons													
Other Zhytomyr Rayons													
Total	581	350		100		85		24		17		8	

(A)	Name of study area (Rayon or City)
(B)	Number who agreed to participate
(C)	Number who completed screening process
(D)	Percent of those who agreed to participate (Column B)
(E)	Number who did not complete screening process (did not complete one or more parts of screening)
(F)	Percent of those who agreed to participate (Column B)
(G)	Number who are scheduled for screening process
(H)	Percent of those who agreed to participate (Column B)
(I)	Number who were scheduled for screening process, but did not show up (for first scheduled screeening visit only)
(J)	Percent of those who agreed to participate (Column B)
(K)	Number who missed original scheduled appointment and are rescheduled for screening process
(L)	Percent of those who agreed to participate (Column B)
(M)	Number of people who initially agreed to particpate, but now refuse to particpate
(N)	Percent of those who agreed to participate (Column B)

(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)
Table # 5	Reasons of Refusals														
Study Rayon	Total Invited	Refused	%	Cannot Afford Trip	%	Cannot Afford Time	%	Afraid of Blood Draw	%	Already Being Examined	%	Other Reason	%	No Reason Given	%
Town of Pripriat															
Polessky															
Ivankiv	581	350	60%	100	17%	85	15%	24	4%	8	1%	17	3%	17	3%
Chornobyl															
Kozelets															
Ripkinsky															
Chernihiv															
City of Chernihiv															
Narodychi															
Ovruch															
Recruitment in Other Rayons (people who moved from study rayons)															
City of Kyiv															
Other Chernihiv Rayons															
Other Zhytomyr Rayons															
Total	581	350		100		85		24		8		17		17	

(A)	Name of study area (Rayon or City)
(B)	Number invited to participate in the study
(C)	Number who refused to particpate in study
(D)	Percent of those who were invited to participate in study (Column B)
(E)	Number who said they could not afford to travel to study center
(F)	Percent of those who refused to participate (Column C)
(G)	Number who said they could not afford to take the time
(H)	Percent of those who refused to participate (Column C)
(I)	Number who refused becasue of blood draw
(J)	Percent of those who refused to participate (Column C)
(K)	Number who refused because they are already in another study or were examined for another reason
(L)	Percent of those who refused to participate (Column C)
(M)	Refused for other reason (for example, not interested, do not have proper clothes)
(N)	Percent of those who refused to participate (Column C)
(O)	Refused but no reason given
(P)	Percent of those who refused to participate (Column C)

Table # 1	Identification Of Current Address of 1986 Cohort										
Study Rayon	Total In 20,000 Cohort in 1986	Total Living Identified	%	Deceased	%	Duplicate Records	%	Moved to Unkown Address	%	Not Found	%
Town of Pripriat	1584	360	23%		0%	11	1%		0%	1213	77%
Polessky	1399	9	1%		0%	5	0%		0%	1385	99%
Ivankiv	737	630	85%	3	0%	19	3%	37	5%	46	6%
Chornobyl	1484	114	8%		0%	14	1%		0%	1356	91%
Kozelets	2089	1421	68%	8	0%	17	1%	88	4%	555	27%
Ripkinsky	1377	1021	74%	11	1%	39	3%	54	4%	252	18%
Chernihiv	2857	1998	70%	14	0%	149	5%	244	9%	452	16%
City of Chernihiv	1193	1024	86%		0%		0%		0%	169	14%
Narodychi	4278	2742	64%	10	0%	816	19%		0%	710	17%
Ovruch	3072	2087	68%	10	0%	327	11%		0%	648	21%
Total	**20070**	**11406**	**57%**	**56**	**0%**	**1397**	**7%**	**423**	**2%**	**6786**	**34%**

Table # 2	Status of Cohort with Identified Current Addresses											
Study Rayon	Total Living Identified	Total Living in Rayon	%	Living in Same Oblast	%	Living in Other Oblast	%	Emigrated	%	Temporarily Absent	%
Town of Pripriat	360		0%	360	100%		0%		0%		0%
Polessky	9		0%	9	100%		0%		0%		0%
Ivankiv	630	581	92%		0%		0%		0%		0%
Chornobyl	114	0	0%	114	100%		0%		0%		0%
Kozelets	1421	1154	81%	69	5%	134	9%	13	1%	51	4%
Ripkinsky	1021	743	73%	117	11%	54	5%	64	6%	43	4%
Chernihiv	1998	1500	75%	355	18%	84	4%	23	1%	36	2%
City of Chernihiv	1024	1024	100%		0%		0%		0%		0%
Narodychi	2742	992	36%	1093	40%	616	22%	32	1%	9	0%
Ovruch	2087	1672	80%	50	2%	293	14%	72	3%		0%
Total	**11406**	**7666**	67%	**2167**	19%	**1181**	10%	**204**	2%	**139**	1%

Table # 3	Status of Recruitment and Screening Activity												
Study Rayon	Total Living in Rayon	Total Invited	%	Accepted	%	Refused	%	Moved to Known Address	%	Unable to Locate	%	Other	%
Town of Pripriat													
Polessky													
Ivankiv	581	494	85%		0%		0%		0%		0%		0%
Chornobyl	0	0											
Kozelets	1154	1154	100%		0%		0%		0%		0%		0%
Ripkinsky	743		0%		0%		0%		0%		0%		0%
Chernihiv	1500	1500	100%		0%		0%		0%		0%		0%
City of Chernihiv	1024		0%		0%		0%		0%		0%		0%
Narodychi	992	992	100%		0%		0%		0%		0%		0%
Ovruch	1672	1672	100%		0%		0%		0%		0%		0%
Recruitment in Other Rayons (people who moved from study rayons)													
City of Kyiv	413	413	100%	350	85%	31	8%	5	1%	27	7%		0%
Other Kyiv Rayons	43	43											
Other Chernihiv Rayons													
Other Zhytomyr Rayons	89	89	100%		0%		0%		0%		0%		0%
Total	**8211**	**6357**		**350**		**31**		**5**		**27**		**0**	

Table # 4

Details of Accepted Invitations

Study Rayon	Total Accepted	Screened	%	Did Not Complete Screening	%	Scheduled for Screening	%	Rescheduled for Screening	%	Did Not Show Up	%	New Refusals	%
Town of Pripriat													
Polessky													
Ivankiv		145											
Chornobyl		37											
Kozelets		285											
Ripkinsky													
Chernihiv													
City of Chernihiv													
Narodychi		426											
Ovruch		770											
Recruitment in Other Rayons (people who moved from study rayons)													
City of Kyiv	350	333	95%			350	100%			17	5%		
Other Chernihiv Rayons													
Other Zhytomyr Rayons		67											
Total	**350**	**2063**		**0**		**350**		**0**		**17**		**0**	

Table # 5	Reasons of Refusals												
Study Rayon	Total Invited	Refused	%	Cannot Afford Trip	%	Cannot Afford Time	%	Afraid of Blood Draw	%	Already Being Examined	%	No Reason Given	%
Town of Pripriat													
Polessky													
Ivankiv													
Chornobyl													
Kozelets													
Ripkinsky													
Chernihiv													
City of Chernihiv													
Narodychi													
Ovruch													
Recruitment in Other Rayons (people who moved from study rayons)													
City of Kyiv	413	31	8%							5	1%	26	6%
Other Chernihiv Rayons													
Other Zhytomyr Rayons													
Total	413	31	8%	0	0%	0	0%	0	0%	5	1%	26	6%